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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/543,080	07/21/2005	Marco Pontanari	60130-2399; 02MRA0191	2571
26096 7590 09/10/2007 CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			EXAMINER KNIGHT, DEREK DOUGLAS	
			ART UNIT 3681	PAPER NUMBER
			MAIL DATE 09/10/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/543,080

Applicant(s)

PONTANARI ET AL.

Examiner

Derek D. Knight

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-16 is/are allowed.
- 6) ☒ Claim(s) 1-12 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 21-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Claims 1-20 remain pending in the application including independent claims 1, 9, 13, and 17. New dependent claims 21-23 have been added.

***Response to Arguments***

Applicant's arguments filed 6/21/2007 have been fully considered but they are not persuasive. Applicant argues that claim 1 recites that the shift collar directly engages the differential case. Keller does not disclose or suggest this feature because element (24) of Keller "does not comprise a differential case." Examiner disagrees and defines the differential case of Keller to comprise element (24) and the element referenced by the added reference letter (C), shown in the figure below.

Applicant argues that the differential gear assembly of Keller is not supported within element 24, however, it is clear that the differential gear assembly is supported by the differential case portion (C) and is housed within the circumferential confines of the case section (24).

Applicant argues that the shift collar (18) does not engage the differential case, but rather engages the ring gear (24), however, the ring gear is an integral part of the differential case portion (24).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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**Claims 1 - 4, 6 - 12, and 17 - 19** are rejected under 35 U.S.C. 102(b) as being anticipated by **KELLER (US 5,030,181)**.

Please note that Figure 1 below has added reference letters to help identify features shown in **KELLER (US 5,030,181)**.

**Regarding claims 1 and 9: KELLER** discloses a drive axle assembly with a locking differential comprising a driving input (A), a carrier (C) including a pinion gear (B) driven by the driving input and a ring gear (24) in meshing engagement with said pinion gear, a differential including a differential gear assembly supported within a differential case (24 and C); a pair of axle shafts (1) driven by the differential gear assembly for rotation about an axis; a locking mechanism including a shift collar (18) movable between an unlocked position where speed differentiation between said pair of axle shafts is permitted and a locked position wherein said shift collar (18) directly engages the differential case (24) such that said differential case, said shift collar, and said pair of axle shafts are fixed for rotation together; and an electronic actuator (16) for generating an electronic signal to move the shift collar from said unlocked position to said locked position.

**Regarding claims 2 and 10: KELLER** shows the electronic actuator (16) including a coil (not numbered) mounted to an axle component (2) and surrounding the shift collar (18) wherein an electronic signal powers the coil to move the shift collar.

**Regarding claim 3 and 14: KELLER** shows the differential case (24 and C) includes a first case half (24) and a second case half (C) and the electronic actuator (16) selectively moves the shift collar to engage one of the case halves.

**Regarding claim 4: KELLER** shows a resilient member (26) for automatically returning said shift collar to the unlocked position when the coil is not powered.

**Regarding claim 6: KELLER** shows a washer (19) fixed to the outboard end of the shift collar. Although Keller does not show it, the washer is capable of reacting with a resilient member. Using the washer to react with a resilient member is simply intended use.

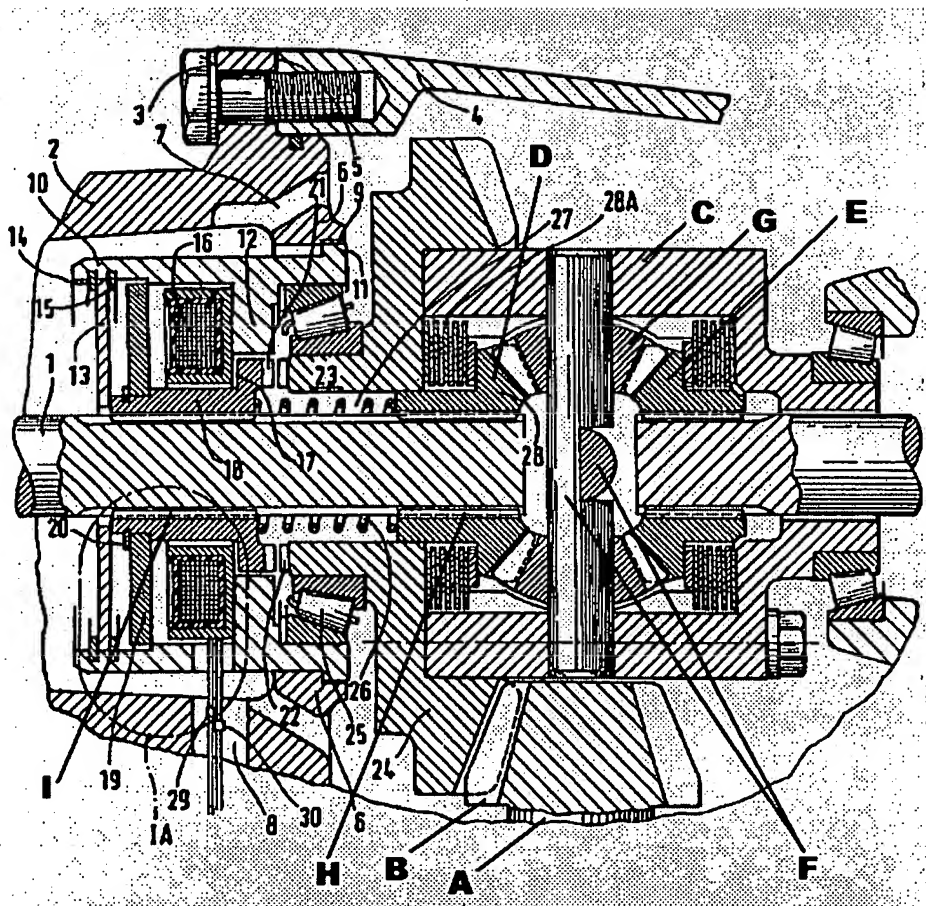
**Regarding claim 7,8, and 12: KELLER** shows the shift collar including an inboard end having a splined surface (21) and an out board end capable of supporting a resilient return member, the inboard end having a greater diameter than the outboard end. The coil defines a central bore surrounding the shift collar at the outboard end, said shift collar moving in an inboard direction in response to said coil being powered via an electronic signal such that the splined surface (21) of the inboard end engages a mating splined surface (22) formed on said differential case (24) such that the differential case is locked to the pair of axle shafts.

**Regarding claim 11: KELLER** shows an axle housing (2) for substantially enclosing said carrier (C) and said pair of axle shafts (1) wherein said coil is supported by the axle housing.

**Regarding claims 17-19: KELLER** discloses a method for controlling a differential lock assembly for a drive axle comprising the steps of:

a) providing a differential for driving a pair of axle shafts (1), the differential including a differential gear assembly supported within a differential case and a shift collar (18) for selective engagement with the differential case (24);

- b) energizing a coil (16) surrounding the shift collar;
- c) In response to step b) moving the shift collar from an unlocked position where speed differentiation between the pair axle shafts is permitted under predetermined conditions to a locked position where both of the pair of axle shafts rotate at a common speed by fixing the shift collar to the differential case.
- d) automatically returning the shift collar to the unlocked position when the coil is not energized
- e) providing driving input to the differential by providing a pinion gear (B) for driving a ring gear (24) attached to the differential case which comprises a first case half (24) and a second case half (C); and wherein step c) further includes moving the shift collar into direct engagement with one of the first and second case halves to fix the shift collar for rotation with the first and second case halves.



**Figure 1: Taken from Figure 1 of KELLER (US 5,030,181)**

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 5 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over KELLER (US 5,030,181) in view of JORDAN (US 4,662,499).**

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**KELLER**, as discussed in the rejection above discloses a differential locking mechanism having a resilient member for returning a shift collar to an unlocked position when the coil is not powered, but fails to teach the resilient member reacting between the coil and an outboard end of the shift collar.

**JORDAN** shows in Figure 4 a differential with a shift collar (128) and a coil (130) for moving the shift collar. Jordan also shows a resilient member (129) reacting between the coil and an outboard end (A) of the shift collar, show in better detail below in Figure 2.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify **KELLER** to have a resilient member react between the coil and an outboard end of the shift collar in view of **JORDAN** to reduce the axial load put on the side gears.

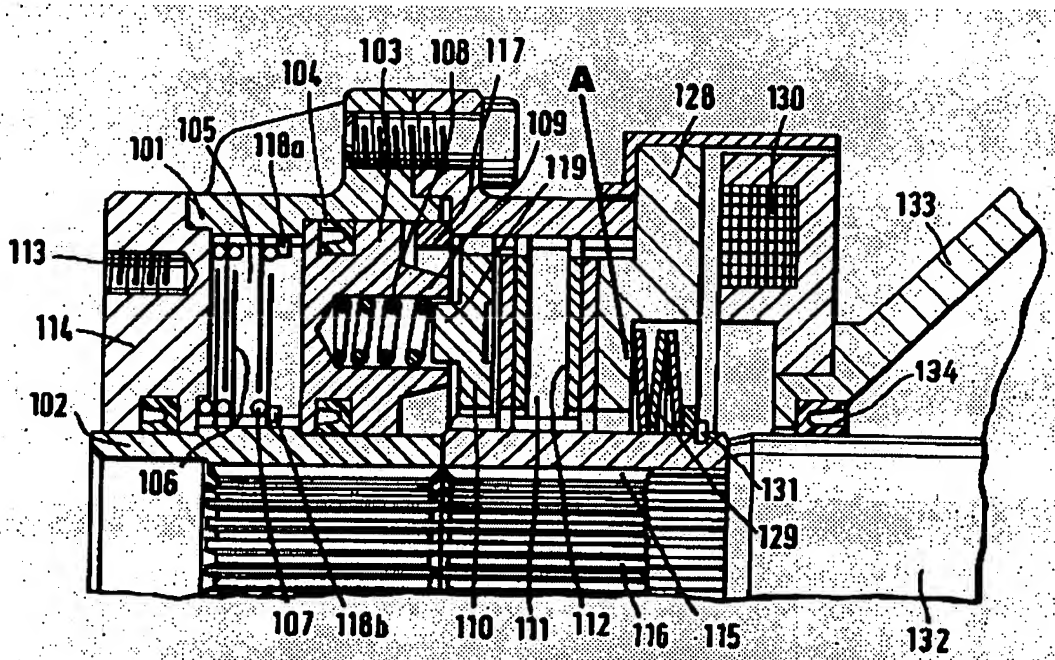


Figure 2: Taken from Figure 4 of JORDAN (US 4,662,499)

***Allowable Subject Matter***

Claims 13-16 allowed.

Claims 21-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek D. Knight whose telephone number is (571) 272-7951. The examiner can normally be reached on Mon - Thurs & every other Friday, 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on (571) 272-7095. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DDK

DDK

*Charles A. Marmorek* 9/4/07  
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